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Sidebar

Hummingbird monitoring in Colorado Plateau parks

By Jean Palumbo

Abstract: A warming climate may affect energetic resources of hummingbirds. Long-term monitoring may help us to determine the effects of this trend on hummingbird abundance and distribution.

Key Words: climate change, hummingbirds, monitoring, plant phenology

Article text



NPS/Jean Palumbo, Southern Colorado Plateau Network

Sarah Haas, wildlife biologist for Bryce Canyon National Park, observes while Adam Hutchins, Dixie National Forest wildlife technician, bands a hummingbird.

Hummingbirds have one of the highest metabolic rates of any animal (Hargrove 2005). When you consider their small size and the long migrations of many species, hummingbirds quite possibly could serve as an early indicator of the cascading effects of a warming climate in the western United States. When the timing of flowering for nectar-producing plants does not coincide with their daily energy needs, hummingbird populations may decline. And since hummingbirds are pollinators, a decline in their numbers could cause a decline in fruit production for the plants they pollinate (Allen-Wardell 1998). This, in turn, may adversely affect populations of organisms that feed on fruit, such as other bird and animal species, including invertebrates and microbes.

“It’s all about phenology,” says Larry Norris, NPS southwest research coordinator for the Desert Southwest Cooperative Ecosystem Studies Unit (CESU). “When do the plants that hummingbirds feed on bloom? When do the midges and gnats that they eat hatch?” To discover how phenology—the timing of periodic biological phenomena—affects hummingbirds, the CESU provided funding in 2003 that was critical in establishing the Hummingbird Monitoring Network (HMN), which is run by executive director Susan Wethington and headquartered in Patagonia, Arizona. This helped to start up monitoring sites in Arizona’s Chiricahua National Monument, Coronado National Memorial, and Tumacacori National Historical Park, and marked the beginning of hummingbird monitoring on the Colorado Plateau.

Monitoring

Long-term monitoring of hummingbirds is a tool that can help us determine the effects of climate change, not only on hummingbirds but also on the ecosystems they inhabit (Armstrong 2007). “If we detect a decline in hummingbird populations,” says George San Miguel, natural resource manager at Mesa Verde National Park, Colorado, “that may be a clue that something is going on in their breeding grounds, along their migration route, or in their wintering range. And that could lead us to identify factors in the environment that are in decline.” San Miguel has been working with the Hummingbird Monitoring Network in Mesa Verde since 2006. He helped recruit a group of volunteers who underwent rigorous training to learn how to band hummingbirds and are the core of the park’s monitoring team ([fig. 1](#), [fig. 2](#), and [fig. 3](#)). This group of citizen scientists also fulfills a public outreach function, educating their friends, neighbors, and others in the birding community about their work, and recruiting new volunteers in the process.

In Utah a collaborative, interagency effort has coalesced around hummingbird monitoring. In 2010 Sarah Haas, biologist for Bryce Canyon National Park, teamed up with Lisa Young, biologist for the Dixie National Forest, and Terry Tolbert, biologist for the Grand Staircase–Escalante National Monument, to begin hummingbird monitoring in southwestern Utah. All three underwent training with the Hummingbird Monitoring Network and established three sites at different elevations and in different vegetation types: ponderosa pine forest at Bryce Canyon (see photo, top of article), desert scrub at the Escalante Visitor Center, and the riparian area at Calf Creek campground in Dixie National Forest. Monitoring across the landscape and in different ecosystems will present the broader picture of hummingbird populations in this part of Utah.

Cooperation among the agencies encourages these three biologists to exchange ideas, work together on solving problems, and come up with strategies that will help species cope with climate change. For example, Tolbert is creating a dichotomous key for pollen collected from nectar plants on the monument. Using this key and pollen gathered from the beaks and heads of hummingbirds, he will be able to identify the plants that hummingbirds rely on. Based on this information, managers could adopt postfire restoration strategies that would improve habitat for hummingbirds by including seeds of these plants in reseeding mixes.

Recapture data from HMN monitoring have shed light on hummingbird migration routes, indicating

that Anna's hummingbirds may be migrating through southeastern Arizona to southern California. Broad-tailed hummingbirds banded in the Chiricahua Mountains of southeastern Arizona have been recaptured in Rocky Mountain National Park, Colorado, suggesting the Rocky Mountain Flyway as the migration route for these tiny birds. As new monitoring sites come online and new collaborative efforts are formed, the capacity for information gathering and study increases. Earlier this year the Hummingbird Monitoring Network and Stonybrook University in New York obtained a grant from the National Aeronautics and Space Administration to study how hummingbirds respond to climate change. The Hummingbird Monitoring Network will work with USA-National Phenology Network to establish monitoring of hummingbird nectar plant phenology as part of this study.

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About the author

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NPS/Jean Palumbo, Southern Colorado Plateau Network

Figure 1. To capture hummingbirds the monitoring crew at Mesa Verde National Park uses a Hall trap, which covers a hummingbird feeder on a stand. When one or more hummingbirds are at the feeder, the trapper releases the string that holds the trap and the trap drops, capturing the feeding hummingbirds.



NPS/Jean Palumbo, Southern Colorado Plateau Network

Figure 2. Hummingbird bander Lynn Udick of the Hummingbird Monitoring Network takes tail feather measurements at Mesa Verde.



Natalie Melaschenko, Southern Colorado Plateau Network

Figure 3. A volunteer with the Hummingbird Monitoring Network releases a banded male broad-tailed hummingbird.



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